Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-14 (canceled)

15. (currently amended) A method for characterizing physical samples to determine the content of the samples comprising the steps of:

obtaining a physical sample, or pair of physical samples,

processing the sample or samples to generate a multidimensional response according to

$$I(\alpha,\beta,\gamma...) = \sum_{i=1}^{r} c_i I_i(\alpha) I_i(\beta) I_i(\gamma)....$$

where the number of data points in each dimension are at least two

$\alpha_1, \alpha_2 ... \alpha_l \quad l \geq 2$

$\beta_1, \beta_2 ... \beta_m \quad m \geq 2$

$\gamma_1, \gamma_2 ... \gamma_n \quad n \geq 2$

and calculating the 1-dimensional responses of the components, $\tilde{I}_i(\alpha)$, $\tilde{I}_i(\beta)$, $\tilde{I}_i(\gamma)$ ... to provide an indication of the content of the sample or samples.

16. (previously presented) The method according to claim 15, wherein the number of samples is two and these are analyzed using a method generating a 2-dimensional response according to

$$I(\alpha,\beta) = \sum_{i=1}^{r} I_i(\alpha) c_i I_i(\beta)$$

and the 1-dimensional responses of the components and the ratios between their concentrations in the two samples, (c_i^B / c_i^A) are calculated by solving the equation system:

$$I^{B}(\alpha,\beta)=\sum_{i=1}^{r} I_i(\alpha)c_i^{B} I_i(\beta).$$

17. (previously presented) The method according to claim 16, wherein the two samples are generated from one sample.

18. (previously presented) The method according to claim 16, wherein one of the samples is used as standard sample to determine the concentrations of the components in a test sample.

19. (previously presented) The method according to claim 15, wherein a single sample is analyzed using a technique generating a 3-dimensional response

$$I(\alpha,\beta,\gamma)=\sum_{i=1}^{r} c_i I_i(\alpha) I_i(\beta) I_i(\gamma).$$

20. (previously presented) The method according to claim 15, wherein a single sample is analyzed using a technique generating a 2-dimensional response simultaneously as environmental conditions are varied in such a way that the concentration of the components are changed in time:

$$I(\alpha,\beta,t)=\sum_{i=1}^{r} c_i(t) I_i(\alpha) I_i(\beta).$$

21. (previously presented) The method according to claim 15, wherein exactly two data points are collected in one of the dimensions.

22. (previously presented) The method according to claim 15, wherein the multidimensional response is measured by fluorescence or nuclear magnetic resonance.

23. (previously presented) The method according to claim 22 for characterization a test sample by analyzing time dependent spectra, wherein the time relates to time after irradiation, time after mixing of components, time after changing environmental conditions, or time after initiation of separation.

24. (previously presented) The method according to claim 22, wherein the test sample is characterized by analyzing two time dependencies, in combination with at least some other dependency selected from the group consisting of energy, wavelength or frequency of radiation.

25. (previously presented) The method according to one or more claims 15, wherein the variations along, at least one of the dimensions, is obtained by varying time, electric, magnetic or electromagnetic field, temperature, frequency modulation or polarization.

26. (previously presented) The method according to claim 25 for characterization a test sample by analyzing time dependent spectra, wherein the time relates to time after irradiation, time after mixing of components, time after changing environmental conditions, or time after initiation of separation.

27. (previously presented) The method according to claim 25, wherein the test sample is characterized by analyzing two time dependencies, in combination with at least some other dependency selected from the group consisting of energy, wavelength or frequency of radiation.

28. (previously presented) The method according to claim 15, wherein the response monitored is broken down to an orthogonal basset e.g., using a principal component division,
the number of components (r) in the sample is estimated, and
the arbitrary normalized 1-dimensional responses of the components are calculated.